

PROCEEDINGS
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THE WATER SHREW OF NOVA SCOTIA.

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In the Bangs Collection, now the property of the Museum of Comparative Zoology, is a series of Water Shrews (*Neosorex*) obtained some years ago by Mr. Outram Bangs in Nova Scotia. These specimens I have lately had occasion to compare with skins representing true *N. albibarbis*, collected in August, 1914, near Tupper Lake in the Adirondacks of New York, by Messrs. Thomas and Fritz Barbour, Dr. J. L. Huntington, and myself. Much to my surprise the Nova Scotian specimens prove not to be *albibarbis* but are at once distinguishable by the whitish underparts, bicolor tail, and more plumbeous instead of blackish coloration above. In these respects they resemble *N. palustris* of western North America, described by Richardson (Zool. Journ., 1828, vol. 3, p. 517) as found in "marshy places from Hudson Bay to the Rocky Mountains." Although undoubtedly the Nova Scotian race intergrades with *palustris*, it is much smaller of skull and differs slightly in color. It may be known as

***Neosorex palustris acadicus* subsp. nov.**

Type, skin and skull 2046, Bangs Collection, Museum of Comparative Zoology, from Digby, Nova Scotia; female, collected July 26, 1894, by Outram Bangs.

General Characters.—Body measurements as in *palustris*, but the coloration above with a slightly brownish cast instead of clear dark plumbeous, belly whitish or silvery, slightly clouded with brownish on the chest; tail bicolor; skull and teeth smaller than in *palustris*.

Description.—Entire dorsal surface of the body a very dark blackish brown, slightly paler on the sides, which with the head and shoulders are very slightly frosted through the presence of minute silvery tips to

the hairs. Ventral surface of body and fore limbs soiled whitish, slightly washed with pale brown across the chest. The bases of the hairs, except at the chin, are dull plumbeous. Wrists and central part of the metacarpal area are dark like the back, the fingers and edges of the palm white. The hind legs are dusky all around and this color extends to the entire outer part of the hind foot above, but the three inner toes and the metatarsal area corresponding are white. Tail sharply bicolor; dark like the back on its upper side and practically all around at the tip. Below it is pure white, but this area narrows terminally and ends at about a centimeter from the tip.

Skull.—The skull does not differ appreciably from that of *albibarb*is though the braincase seems to be a trifle wider. From *palustris*, as represented by Alberta specimens assumed to be typical, it differs in the much shorter rostrum, though the braincase is equally broad. The appearance of breadth is therefore much more marked in the Nova Scotian animal, though it is only proportionately broader. The teeth are smaller, but seem essentially the same in structure, though the third unicuspid in the specimens at hand appears to be relatively smaller in comparison with the fourth.

Measurements.—The collector's measurements of the type specimen are: total length 150.5 mm., tail 66.5, hind foot 20, which are essentially the same as for *palustris* (Merriam gives 155, 65.5, and 19 respectively for the corresponding measurements taken from Richardson's description, and 157, 68, and 20 for a specimen from Edmonton, Alberta). A large male from Halifax, N. S., measures 167, 69, 19.5 for these respective dimensions.

The following cranial measurements are taken from the type skull, with in parentheses the corresponding dimensions of a specimen of *palustris* from Alberta: greatest length 20.8 (22.1), basal length 18 (19.5), palatal length 9.1 (10.3), upper tooth row 9 (10), greatest width outside molars 5.8 (6.1), greatest width of brain case 10.1 (10). For a specimen of *palustris* from Edmonton, Alberta, Merriam gives, greatest length 22.5, width of braincase 10.2.

Remarks.—The Nova Scotia Water Shrew is closely related to *N. palustris palustris*, from which it differs in the size and proportions of the skull, and in its slightly browner color, which on the belly is sometimes a very pronounced wash. Intergradation takes place, probably in the region of southern Canada. Preble (No. Amer. Fauna, 1902, No. 22, p. 71) considers specimens from the north of Lake Winnipeg as representing *palustris*, with which their skulls agree; he mentions, however, that in some specimens the belly is slightly washed with brownish. Probably the smaller Rocky Mountain Water Shrew (*navigator*) should likewise be considered a subspecies of *palustris* and it was so regarded by Merriam (No. Amer. Fauna, 1895, No. 10, p. 93) who says that it "fluctuates considerably in size in the various mountain ranges it inhabits, and seems to intergrade completely with *S. palustris*. Specimens from the Bighorn and Wind River mountains in Wyoming are fairly intermediate, and it is probable that intergrades will be found along the east base of the Rocky Mountains in Alberta." The White-lipped Water Shrew (*N. albibarb*is) the type

of which is from Profile Lake, Franconia Mountains, New Hampshire, is very sharply distinguished from *palustris* and *acadicus* by its much blacker dorsal surface which is hardly at all contrasted with the dark, smoky brown belly, save at the chin, which is white. It is further distinguished by its tail, which is typically black both above and below. Nevertheless intergradation takes place in southern Canada, so that it must rank as a subspecies of *palustris*. Thus a specimen taken by A. E. and O. Bangs at Lake Edward, Quebec, is as silvery on the belly as in *acadicus*, but the chest and throat are dark brown; moreover the tail is entirely dark except at the base ventrally, where for about a centimeter it is pure white. A second specimen from North Bay, Ontario, is quite like *albibarbis* in having a dark belly and chest, and white chin, but the basal half of the tail is white ventrally. These specimens are therefore intermediate between *palustris*, *acadicus* and *albibarbis*. The continental forms of the typical subgenus, so far as now recognized, should stand as follows:

Neosorex palustris palustris (Richardson), from Hudson Bay west on the plains to the foothills of the Rocky Mountains.

Neosorex palustris navigator Baird, the Rocky Mountains from British Columbia to Colorado, and the Sierra Nevada of California, a slightly smaller race.

Neosorex palustris alaskanus (Merriam), known from southern Alaska (Point Gustavus, Glacier Bay); yet smaller with a shorter and more massive skull.

Neosorex palustris acadicus subsp. nov., from Nova Scotia westward, intergrading in southern Canada with typical *palustris* and the following.

Neosorex palustris albibarbis Cope, from the Adirondacks of New York and the White Mountains of New Hampshire southward along the Alleghanies; a darker race, with dark belly and tail, and white chin.

The problematical *Neosorex hydrodromus* (Dobson) described from Unalaska Island, Alaska, remains unknown except from the original diagnosis.